March 1995

National Semiconductor

LM2574/LM2574HV Series
SIMPLE SWITCHER™ 0.5A Step-Down Voltage Regulator

General Description

The LM2574 series of regulators are monolithic integrated circuits that provide all the active functions for a step-down (buck) switching regulator, capable of driving a 0.5A load with excellent line and load regulation. These devices are available in fixed output voltages of 3.3V, 5V, 12V, 15V, and an adjustable output version.

Requiring a minimum number of external components, these regulators are simple to use and include internal frequency compensation and a fixed-frequency oscillator.

The LM2574 series offers a high-efficiency replacement for popular three-terminal linear regulators. Because of its high efficiency, the copper traces on the printed circuit board are normally the only heat sinking needed.

A standard series of inductors optimized for use with the LM2574 are available from several different manufacturers. This feature greatly simplifies the design of switch-mode power supplies.

Other features include a guaranteed ± 4% tolerance on output voltage within specified input voltages and output load conditions, and ± 10% on the oscillator frequency. External shutdown is included, featuring 50 ìA (typical) standby current. The output switch includes cycle-by-cycle current limiting, as well as thermal shutdown for full protection under fault conditions.

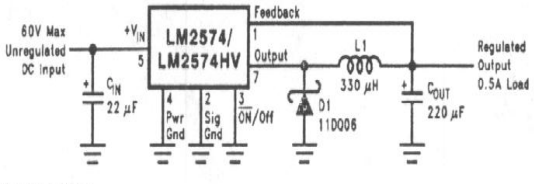
Features

- 3.3V, 5V, 12V, 15V, and adjustable output versions
- Adjustable version output voltage range, 1.23V to 37V (57V fo HV version) ± 4% max over line and load conditions
- Guaranteed 0.5A output current
- Wide input voltage range, 40V, up to 60V for HV version
- Requires only 4 external components
- 52 kHz fixed frequency internal oscillator
- TTL shutdown capability, low power standby mode
- High efficiency
- Uses readily available standard inductors
- Thermal shutdown and current limit protection

Applications

- Simple high-efficiency step-down (buck) regulator
- Efficient pre-regulator for linear regulators
- On-card switching regulators
- Positive to negative converter (Buck-Boost)

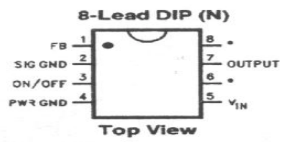
Typical Application (Fixed Output Voltage Versions)



TL/H/11394–1

Note: Pin numbers are for 8-pin DIP package.

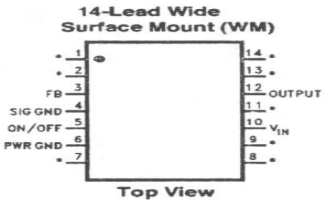
Connection Diagrams



TL/H/11394–2

*No internal connection, but should be soldered to PC board for best heat transfer.

Order Number LM2574-3.3HVN, LM2574HVN-5.0, LM2574HVN-12, LM2574HVN-15, LM2574HVN-ADJ, LM2574N-3.3, LM2574N-5.0, LM2574N-12, LM2574N-15 or LM2574N-ADJ
See NS Package Number N08A



TL/H/11394–3

Order Number LM2574HVM-3.3, LM2574HVM-5.0, LM2574HVM-12, LM2574HVM-15, LM2574HVM-ADJ, LM2574M-3.3 LM2574M-5.0, LM2574M-12, LM2574M-15 or LM2574M-ADJ
See NS Package Number M14B

Patent Pending
SIMPLE SWITCHER™ is a trademark of National Semiconductor Corporation.

©1995 National Semiconductor Corporation